

11/pts : 1

10/506933

DT09 Rec'd PCT/PTO 08 SEP 2004  
SEMI-AUTOMATIC WEAPON

### Technical field

The invention relates to a weapon, namely it relates to smallarms such as rifles, carbines and shotguns.

### Background Art

Different embodiments of smallarms and devices for feeding of ammunition therefor are known.

Known semi-automatic rifle or shotgun having a smooth or rifled bore comprise a casing having a lateral opening for introducing cartridges on one side of said casing and a lower opening for ejecting from below the case of each cartridge fired. At the level of the lateral opening is mounted a lateral feeding means, which is able to receive and to hold a second cartridge during the firing of a first cartridge and to introduce the second cartridge automatically into the gun with the aid of the breechblock after the firing of the first cartridge and the ejection of its empty case [patent US 6,044,580, 2000]. There is a deficiency of the known shotgun such that said shotgun has limited range of its using accordingly follows: there is no an alternative barrel; a number of feeding cartridges is limited and it may be used with the cartridges of one calibre only; if there will be a misfire of one cartridge then cocking, trigger and firing mechanisms will be jammed and the shotgun will break down; therefore the shotgun is unreliable and inconvenient in use.

Known semi-automatic rifle is choosen as a prototype of the first inventive weapon embodiment, said rifle comprises a barrel part with a barrel receiver mounted within a stock and provided with cocking, firing and trigger mechanisms, said mechanisms include a hammer, a firing rod movably mounted within a tube with aid of an arming spring, a firing nipple which is positioned within a chamber and communicates with both the rear of a barrel bore and the tube [patent US 4,503,633, 1985]. There is a deficiency of the known rifle such that said rifle has limited range of its using accordingly follows: there is no an alternative barrel; a number of feeding cartridges is limited and it may be used with the cartridges factoried of one calibre only; if there will be a misfire of one cartridge then cocking, trigger and firing mechanisms will be jammed and the rhythm of shooting will be broken; combustion gas evacuated from the barrel through the the interior of the stock will contaminate internal surfaces of the cocking, firing and

trigger mechanisms which cleaning is complicated; therefore the shotgun is unreliable and inconvenient in use.

Known self supporting ammunition cartridge is chosen as a prototype of the second inventive weapon embodiment, the ammunition cartridge is made as a magazine with cartridges and has a case formed by cylindrical cartridge-cases which are bonded together with resin. The cartridge-case is a hollow cylinder with a primer at its aft end and a projectile recessed into its forward end. A weapon for such cartridges-magazine has a gap between an aft end of a barrel and a barrel receiver, the gap is long enough to accommodate the cartridges-magazine. The cartridges-magazine is moving from below upwards during shooting, and the cartridges-magazine has one or two rows of the charged cartridge-cases displaced one from another [invention US H61, 1986]. There are some deficiencies of the known weapon provided with known cartridges-magazine as follows: an upper end of the cartridges-magazine having shot cartridge-cases may be rested against an upper weapon bracket and/or hide the aim therefore it is necessary to move away said upper end by the hand, this moving distracts attention during shooting and delivers inconveniences, especially when the cartridges-magazine is multirow; and there is no special equipment for equipment of the cartridges-magazine in marching conditions.

#### Disclosure of the Invention

It is a primary object of the present invention to expand a range of a use of a weapon and its functionality, and what's more to provide the weapon with an ammunition of different calibres and purposes. Another object of the present invention to unify cocking, trigger and firing mechanisms that allows to mount barrels having different diameters and calibres therefore it is possible to lower expenses for manufacturing of such system of the weapon Also an object of the present invention to change of an order of feeding an ammunition during shooting that allows to increase reliability and convenience of use of the weapon.

Accordingly the first embodiment, a semi-automatic weapon comprises a barrel part, a casing, cocking, trigger and firing mechanisms placed within the casing, and also a magazine for cartridges and a butt. That is new that the cocking mechanism comprises a movable member which may move within the casing and is used for cocking a hammer with the aid of an arming spring, thus that the shape and dimensions of the movable element, the rigidity of the arming spring and the travel thereof ensure several cycles of cockings of the hammer during one working movement of the compressed arming spring, and the movable member may be stopped after every cycle of cocking the hammer.

The barrel part may comprise two barrels. In this case: the barrels may have a rifled bore, and another barrel may have a smooth bore; the barrels may be with different calibres; one of the barrels may be located above another barrel. In this case, the firing mechanism may comprise two movable strikers and may be made with possibility to strike one of the movable strikers, and besides the movable strikers may be located one above another, and the barrels may be located one above another too. In this case, the weapon may comprise a movable cartridge chamber-magazine for a lateral feed, such chamber-magazine has through receiving holes for cartridges which are disposed in two rows, and such chamber-magazine is arranged between a back part of the barrel and the casing and embodied with possibility to stop when an axis of a cartridge coincides with an axis of the barrel. The through receiving holes may be located in the rows one above another.

The movable element may be made as a toothed rack which is movable in longitudinal direction and toothed with the trigger mechanism for its cocking. In this case, the hammer may be mounted on a shaft and spring-biased thereon, thus that the hammer may turn around of the shaft with the aid of the toothing with the toothed rack. The toothing between the hammer and the toothed rack may be disconnected. In this case, it may be a mechanism for the disconnection of the toothing between the hammer and the toothed rack, and said mechanism may displace the hammer along the shaft.

Abovementioned weapon made as smallarms may comprise a movable cartridge chamber-magazine for a lateral feed, this chamber-magazine has through receiving holes for cartridges which are disposed in a row, and this chamber-magazine is arranged between a back part of the barrel and the casing and embodied with possibility to stop when an axis of a cartridge coincides with an axis of the barrel.

Abovementioned weapon made as smallarms may comprise an arrow throwing device mounted below the barrel part. In this case the butt may have a container for disassembled arrows within the butt.

Accordingly the second embodiment, a semi-automatic weapon comprises a butt, a barrel part, a casing, cocking, trigger and firing mechanisms placed within the casing, and also a cartridge chamber made as a movable device for feeding cartridges disposed in a row. The movable device is arranged between a back part of a barrel and the casing and embodied with possibility to stop when an axis of a cartridge coincides with an axis of the barrel. That is new that the movable device is embodied for a repeated use and made as a rigid cartridge chamber-

magazine for a lateral feed, and the chamber-magazine has through receiving holes for cartridges which are disposed in one or more rows.

The chamber-magazine may be removable.

The chamber-magazine may be provided with a device for pushing out cartridges and/or cartridge-cases from the receiving holes.

The chamber-magazine may be mounted on a guide-bar located perpendicularly axes of the barrel and may move along the guide-bar.

The chamber-magazine may be spring-biased along the guide-bar.

The barrel part may comprise two barrels, and besides the chamber-magazine may have the receiving holes located in two rows, and the firing mechanism may comprise two movable strikers and be made with possibility to strike one of the movable strikers. The movable strikers may be located one above another, the barrels may be located one above another, and the through receiving holes may be located one above another in the rows. Just as in the first embodiment, one of the barrels may have a rifled bore, and another barrel may have a smooth bore; the barrels may be made with different calibres.

As well as in the first embodiment, the cocking mechanism may comprise a movable member which may move within the casing and is used for cocking a hammer with the aid of an arming spring, thus that the shape and dimensions of the movable element, the rigidity of the arming spring and the travel thereof ensure several cycles of cockings of the hammer during one working movement of the compressed arming spring, and the movable member may be stopped after every cycle of cocking the hammer.

Other combinations of these two embodiments or their special cases are possible.

For both variants is common that both the cocking mechanism and the mechanism for feeding ammunition with the inventive cartridge chamber-magazine operate similar to the principle of operating a typewriter carriage.

#### Brief description of the figures on the drawings

The invention is described with reference to the accompanying drawings which show one of embodiments of Kobets's system semi-automatic smallarms. Fig.1 shows a vertical longitudinal section of the smallarms, Fig.2 shows a horizontal longitudinal section of the smallarms, Fig.3 shows a vertical cross-sectional view taken through the location of trigger and firing mechanisms, and Fig.4 shows a vertical cross-sectional view taken through the location of a cartridge chamber-magazine.

### The Example for Carrying out the Invention

The semi-automatic smallarms of Kobets's system has a barrel part 1, a casing 2 having cocking, trigger and firing mechanisms therein, and also a cartridge chamber-magazine 3 and a butt 4 having a pistol handle and a container for disassembled arrows within said butt. The barrel part 1 comprises two vertically located barrels which embodied so that a lower barrel has a rifled bore, and an upper barrel has a smooth bore. Both a forward sight 5 and a rear rod 6 for the installation of a simple or optical sight are located above the barrels, and both a forestock 7 and an arrow throwing device 8 are located below the barrels. The cocking mechanism comprises an arming spring 9 fitted on a longitudinal shaft 10 which is located along the casing 2 and fixed by its ends to both a back 11 of the casing 2 and a stop 12. The arming spring 9 is supported by one end of a movable toothed rack 13 combined with a handle 14 which goes out through a sawcut of a wall of the casing 2. The toothed rack 13 is mounted by means of long slots 15 and toothed with a toothed lower part 16 of a hammer 17. The trigger mechanism comprises a shaft 18 having a variable cross-section. There are some details fitted on a round part of the shaft 18 as follows: a trigger spring 19; the hammer 17 having a displaced shock surface, toothed with the toothed rack 13 by means of a gear and having possibility to be removed from the toothed rack 13 aside; a slide 20 having a lower part with a device 21 for a stopping the toothed rack 13 when the hammer 17 is removed therefrom. A wedge 22 is fitted on a square part of the shaft 18 and connected with a trigger 24 by means of a traction 23. Also the trigger mechanism comprises a safety-lock 25 placed on the wall of the casing 2, a terminator 26 of a rotation of the hammer 17 is arranged in a place of lowering of an occipital part of the hammer 17. The firing mechanism comprises two movable strikers 27 located one above another and supplied with a device 28 for simultaneous vertical displacement of their calcaneal part in relation to the shock surface of the hammer 17. The toothed rack 13 has a slots 29 to stop a rack moving when the hammer 17 is removed therefrom. Output ends of the movable strikers 27 are installed in holes 30 opposite to caps of cartridges 31. The chamber-magazine 3 has a rigid rectangular-shaped case and is provided with through receiving holes for cartridges 31, 45 which are disposed in two rows one above another. The chamber-magazine 3 may be displaced in both side directions and is installed horizontally into a clearance between back parts of the barrels 1 and the casing 2 by means of guide-bars 32. The chamber-magazine 3 is provided with a device 33 for pushing out cartridge-cases or misfired cartridges 31, 45. The chamber-magazine 3 has bottom longitudinal grooves 34 for ledges of a device 35 intended for a stopping of the chamber-magazine at the moment of shooting. The chamber-magazine 3 moves on the guide-bars 32 by

means of springs 36 fitted on shafts 37 which pass through walls of the casing 2. Stop parts 38 for moving the chamber-magazine 3 are mounted on both ends of the shafts 37. The arrow throwing device 8 comprises a bowstring stretched on an elastic bow having a hole 39 for the arrows therein, the elastic bow is fixed to a low part of the forward sight 5. There is a deepening 40 in a forward part of the forestock 7 for one end of the stretched arrow; a hook 41 fitted on a shaft for a linkage of the stretched bowstring with another end of the arrow is mounted in the deepening 40 and spring-biased by means of a tension spring 42.

A single-barrel embodiment of the small arms is possible. In this case there are no some details, for example as follows: the upper barrel of the barrel part 1; the upper striker 27 in the firing mechanism; the upper row of the holes 30 for cartridges 31. When it is the double-barrelled embodiment of the small arms, the barrel part 1 may comprise a smoothbore barrel 43 having calibre for the hunting cartridges 31 and a rifled barrel 44 for the appropriate cartridges 45.

For making a shot it is necessary to compress the arming spring 9 by means of moving back the handle 14 of the toothed rack 13. The cocked arming spring 9 is uncompressed and pushes forward the toothed rack 13, at the same time the hammer 17 is cocked by means of the tothing between the teeth of the toothed rack 13 and the teeth of the hammer 17 and settles down by its rear part on the terminator 26. Simultaneously the trigger spring 19 is cocked because it is fitted on the same shaft 18 and covers a rear part of the hammer 17. When a head of the safety-lock 25 is displaced forward, its lever settles down above the hammer 17 that provides immovability of the hammer 17. A head of the safety-lock 25 is displaced back, and its lever sets free the hammer 17, and when the trigger 24 is pushed, the traction 23 is moved forward with the wedge 22, then the wedge 22 displaces aside the slide 20 with the device 21 for a stopping the toothed rack 13. In turn, the slide 20 displaces the hammer 17 aside from the toothed rack 13 and disconnects the tothing therebetween, at the same time the slide 20 pushes the device 21 into the slot 29 of the toothed rack 13, and then the trigger spring 19 is compressed around the shaft 18. After the disconnection with the toothed rack 13, the hammer 17 strikes one of the strikers 27 by means of the uncompressing of the trigger spring 19, and, in turn, the stricken striker 27 strikes a primer of the cartridge 31, and the shot occurs. The lever of the device 28 fitted on the shaft 18 is moved downwards or upwards on a wall of the casing 2 to reinstall the strikers 27 from one row of cartridges 31 to other row of cartridges 45. When trigger 24 is released, the wedge 22 comes back in an initial position, the hammer 17 is toohed with the toothed rack 13 by means of the compressed trigger spring 19, and the slide 20 with the device

21 comes back in an initial position too. As soon as the device 21 for a stopping goes out the slot 29, then the toothed rack 13 moves forward and cocks the hammer 17 again by means of the arming spring 9. At the time of the cocking, the teeth 16 of the hammer 17 touch a lever of the device 35 to stop the the chamber-magazine 3, then one end of the lever of the device 35 goes out the slot 34 of the chamber-magazine 3 to release it, then the chamber-magazine 3 displaces by means of the springs 36 and is stopped by means of the device 35, and the primers of a new pair of the cartridges 31, 45 is placed opposite the strikers 27. When the trigger 24 is pushed again, the abovementioned cycle is repeated.

During preparation of the device 8 for shooting by arrows, a rear end of one arrow is push through the hole 39 and instulled on the bowstring which is stretched and interposed into the deepening 40 of forestock 7, and then the bowstring is hooked by means of the hook 41. When the hook 41 is pushed, the bowstring runs off this hook and throws forward the arrow.

It is possible to use the arrow to throw a safety or fixing cable on required height or distance or to make an aim silent shooting by arrows on distance up to 50 meters.

Fulfilment of a shot for the single-barrel embodiment of the small arms is similar to fulfilment of a shot for its double-barrelled embodiment.

This inventive weapon system allows in relatively simple manner to use different barrels (with respect to the calibre, rifling thereof etc.) and to feed the ammunition manually or semi-automatically and to select required cartridge calibre or the type thereof for shooting.